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HEWLETT-PACKARD COMPANY
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EXAMINER

CHERVINSKY, BORIS LEO

ART UNIT PAPER NUMBER

2835

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Please find below and/or attached an Office communication concerning this application or proceeding.



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 20040318

Application Number: 10/017,543
Filing Date: December 13, 2001
Appellant(s): ROESNER ET AL.

Louis A. Mok, Reg. No. 22,585
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 02/23/04.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

Appellant's brief includes a statement that claims 1-30 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

6,197,859	Green et al.	03/2001
5,608,610	Brzezinski	03/1997
6,245,400	Tzeng et al.	06/2001
6,049,458	Lee et al.	04/2000

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1-9, 22-30 rejected under 35 U.S.C. 103(a) as being unpatentable over Green et al. in view of Brzezinski

Green discloses the assembly comprising a thermal interface disposed between a heat sink 42 and a heat generating electronic component 41, the thermal interface having a carrier 44 made of either metal foil, such as aluminum foil (col. 8, lines 26-27) or thermally conductive plastic sheet, the carrier having a layer of a phase-change material 45 on one side and a layer of a pliable thermally conductive material 46 on the other side (col. 3, line 65). Green discloses the claimed invention except having the pliable thermally conductive material being the phase change material therefore having that material on both sides of the carrier. Brzezinski discloses the thermal interface arrangement having the phase change material 58 (col. 6, lines 33-35) on one side of the carrier 56 and thermal grease on the opposite side of the carrier (col. 7, lines 12-16). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to apply phase change material on only one side of the carrier as disclosed by Green and have just any other pliable thermally conductive material, such as thermal grease, on the other side as disclosed by Brzezinski because:

- a. the pliable thermally conductive materials such as grease are well known and widely used as indicated by Green, col. 2, lines 27-33;
- b. to apply the thermal grease on one side of the carrier can be more economical since thermal grease is readily available and inexpensive;
- c. the thermal grease layer can be applied to the carrier in any desirable thickness;
- d. the thermal grease layer can be field applied on the carrier and does not need to be prefabricated as it may be the case with phase change material, therefore such modification to the thermal interface disclosed by Green would be a justified option.

3. Claims 10, 11, 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Green et al. in view of Brzezinski and further in view of Tzeng et al.

Green discloses the claimed invention except a removable protective cover. Tzeng et al. disclose the thermal interface having a pressure sensitive layer 13 covered by a removable protective cover comprising a peelable backing. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use removable protective layer as disclosed by Tzeng in the structure disclosed by Green as to protect the pliable thermal compound layer prior to installation.

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Green et al. in view of Brzezinski and further in view of Tzeng, as applied to claim 10, and further in view of Lee et al.

Green discloses the claimed invention except a removable protective cap. Lee discloses the removable protective cap 56 to protect thermal grease 40 prior to installation. It would have been obvious to one having ordinary skill in the art at the time the invention

was made to have the protective removable cap as disclosed by Lee et al. in the device disclosed by Green et al. in order to protect pliable surface or thermal grease.

(11) Response to Argument

The appellant's argument that Green teaches away from using a thermally conductive pliable material on only one side of the carrier by pointing out to some disadvantages of using thermal grease is not persuasive because having the thermal grease on one side of the carrier and phase change material on another side is still known solution as disclosed by Green, although Green suggests an improvement to that known and previously used structure.

The argument regarding claims 1, 10 and 22 stating that the layer of pliable thermal compound is not a phase change material is not convincing because claiming a phase change material and a pliable thermal compound is, in fact, addressing two different, not mutually exclusive properties of a material. Since the terms in the claims must be given broadest reasonable interpretation the pliable thermal compound does not exclude phase change material, so it can be a pliable thermal compound and a phase change material or vice versa at the same time. In view of the above the Green reference is solely sufficient to reject claims 1 and 22, and claim 10 in view of Tzeng since the law of anticipation requires that a distinction be made between the invention described or taught and the invention claimed. It does not require that the reference "teach" what the subject patent teaches. Assuming that a reference is properly "prior art," it is only necessary that the claims under consideration "read on" something

disclosed in the reference, i.e., all limitations of the claim are found in the reference, or "fully met" by it.

Brzezinski reference is applied in rejection just to reinforce examiner's position that the thermal interface having the phase change material on both sides of the carrier can be modified by using the phase change material on only one side and thermal grease on the opposite side. In response to appellant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Brzezinski teaches the interface disposed between the heat sink 12 and the heat generating components 28-38 consisting of a carrier 56 having phase change material 58 on one side and thermal grease on the other side (col. 7, lines 12-16). Brzezinski allows a wide range of different materials for element 58 that includes phase change salts and it appears to be irrelevant in what states are those salts are - solid, liquid or vapor since they suppose to change their phase depending on heat generated by the components. The Brzezinsky's and Green references are properly combined since it is clearly suggested that the phase change material and thermal grease to be disposed on opposite sides of the carrier having an enclosed chamber on the side of the phase change material with superior heat absorption property and because the chamber

prevents phase change material from escaping while the thermal grease is not being displaced when heat is applied.

The appellant's argument regarding Tzeng reference is not persuasive because Appellant does not provide sufficient evidence that the removable protective cover 14 used to cover pressure sensitive adhesive in Tzeng patent cannot be used to cover a layer of pliable thermal compound which, by definition, covers wide variety of different materials and some of them comprise adhesive substances, e. g. epoxy, silicon.

In response to appellant's argument regarding claim 12 that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Lee et al. discloses the protective cap to protect thermal grease prior to installation, therefore it would be obvious to have the cap as disclosed by Lee in the structure disclosed by Green since pliable thermal layer disclosed by Green may require such protection.

For the above reasons, it is believed that the rejections should be sustained.

Application/Control Number: 10/017,543
Art Unit: 2835

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Respectfully submitted,

Boris L. Chervinsky, Primary Patent Examiner
March 19, 2004


3/19/04

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